		Туре	L #	Hits	Search Text	DBs	Time Stamp
	1	BRS	L1	21	(electrochemically adj3 (reduce or reduces or reducing) adj3 (oxide or oxides))	USPAT; US-PGP UB; EPO; JPO; DERWEN T; IBM_TD B	2002/10/02 10:31
	2	BRS	L2	0	1 same tungsten .	USPAT; US-PGP UB; EPO; JPO; DERWEN T; IBM_TD B	2002/10/02 10:19
	3	BRS	L3	5	1 and tungsten	USPAT; US-PGP UB; EPO; JPO; DERWEN T; IBM_TD B	2002/10/02 10:31
4	4	BRS :	L4	21	reducing or lessen or shrink or shrinking or cut or cutting or diminish or diminishing or trim or trimming or ease or earasing or condense or condense or		2002/10/02 10:34

DOCUMENT-IDENTIFIER: US 20020132476 A1

TITLE: Barrier layer associated with a conductor layer in damascene structures

## ----- KWIC -----

[0006] Also, the microelectronics industry has recently migrated towards the

investigation of more robust and conductive metals for use in interconnection  $\ \ \,$ 

technology, such as Copper (Cu). Cu is approximately 40% lower in resistivity

than Al and is much more resistant to reliability problems such as

electromigration. Unfortunately, Cu has been known to cause other reliability

problems associated with the high rate of Cu  $\underline{\text{diffusion}}$  through silicon

substrates and dielectric films. One such problem is electrical shorting,

wherein the  $\operatorname{Cu}$  from one  $\operatorname{Cu}$  interconnect line diffuses into an adjacent

dielectric region, forming a conductive path to another Cu interconnect line.

Another problem is transistor poisoning, wherein Cu diffuses into the

underlying silicon substrate and causes junction leakage along with  $\underline{\textbf{reduced}}$ 

channel mobility in the transistor, thereby destroying the device. Thus, to

implement  $\operatorname{Cu}$  as an interconnect material it has become necessary to develop

methods for preventing  $\operatorname{Cu}$  from diffusing through layers of a semiconductor

device. Hence, various means have been suggested to deal with the problem of

copper <u>diffusion</u> into integrated circuit material. Several materials,

especially metallic ones, have been suggested for use as barriers to prevent

the copper  $\underline{\text{diffusion}}$  process. Tungsten, molybdenum, and titanium nitride (TiN)

have all been suggested for use as copper diffusion

10/02/2002, EAST Version: 1.03.0002

US-PAT-NO: 6426289

DOCUMENT-IDENTIFIER: US 6426289 B1

TITLE: Method of fabricating a barrier layer associated

with a conductor layer in damascene structures

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